

# Two new species of the *ligustri* group in *Macrophya* Dahlbom (Hymenoptera: Tenthredinidae) from Anhui and Jiangxi, China

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**Abstract:** Two new species of the *ligustri* group in *Macrophya* Dahlbom (Hymenoptera: Tenthredinidae) from Anhui and Jiangxi Provinces in China are described: *M. guanshanicus* Li, Liu & Wei sp. nov. and *M. nigroscapila* Li, Liu & Wei sp. nov.

**Key words:** Symphyta; Tenthredinoidea; sawfly; taxonomy

中国钩瓣叶蜂属女贞钩瓣叶蜂种团 *Macrophya ligustri* group 两新种（膜翅目：叶蜂科）

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**摘要：**记述中国安徽和江西境内钩瓣叶蜂属 *Macrophya* Dahlbom 女贞钩瓣叶蜂种团 *M. ligustri* group 2 新种：官山钩瓣叶蜂 *M. guanshanicus* Li, Liu & Wei sp. nov. 和黑角钩瓣叶蜂 *M. nigroscapila* Li, Liu & Wei sp. nov.。

**关键词：**广腰亚目；叶蜂总科；叶蜂；分类

## Introduction

*Macrophya* Dahlbom, 1835, the third largest genus in the subfamily Tenthredininae (Hymenoptera: Tenthredinidae) contains 290 species worldwide (Li & Wei 2013; Li *et al.* 2013a, b, c, 2014a, b, 2016a, b, 2017a, b, 2018a, b; Liu *et al.* 2015a, b, 2016a, b, 2017a, b; Shinohara 2015; Shinohara & Li 2015; Shinohara & Yoshida 2015; Taeger *et al.* 2010; Wei *et al.* 2006, 2013). In China, 151 *Macrophya* species have been recorded (Li *et al.* 2012, 2013a, b, c, 2014a, b, 2016a, b, 2017a, b, 2018a, b; Li & Wei 2012, 2013; Liu *et al.* 2015a, b, 2016a, b, 2017a, b; Taeger *et al.* 2010; Wei *et al.* 2006, 2013; Wu *et al.* 2012; Zhang & Wei 2006; Zhao *et al.* 2010a, b; Zhao & Wei 2011; Zhu & Wei 2009; Zhu *et al.* 2012).

The *M. ligustri* group is a small group in *Macrophya* with 4 species worldwide. In China, there are 4 species in this group: *M. ligustri* Wei & Huang, 1997 (Wei *et al.* 1997), *M. megapunctata* Li, Liu & Wei, 2017 (Liu *et al.* 2017a), *M. micromaculata* Wei & Nie, 2002

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(Wei & Nie 2002) and *M. southa* Li, Ji & Wei, 2017 (Liu *et al.* 2017a). These species are similar in general morphology and form a distinct species group. Here, another two new species belonging to this species group are described.

## Material and methods

Specimens were examined with a Motic-SMZ-168 stereomicroscope. Adult images were taken with a Nikon D700 digital camera and the series of images were montaged using Helicon Focus (©HeliconSoft). All images were further processed with Adobe Photoshop CS 11.0.

Morphological descriptions of new species are based on the holotype. The terminology of genitalia follows Ross (1945) and that of general morphology follows Viitasaari (2002) although for a few terms (e.g. middle fovea and lateral fovea), we follow Takeuchi (1952).

Specimens examined during this study are deposited in the Insect Collection of Central South University of Forestry and Technology, Changsha, Hunan, China (CSCS) including all holotypes and paratypes of these two new species.

## Taxonomy

### *Macrophya ligustri* species group

Diagnosis is provided by Liu *et al.* (2017b).

#### 1. *Macrophya guanshanicus* Li, Liu & Wei sp. nov. (Figs. 1–8)

Female. Body length 11 mm. Body and legs largely black; following parts yellowish brown: palp mostly, basal half of mandible, labrum, clypeus, small triangular macula on lateral side of postocellar area, broad band on posterior margin and lateral margin of pronotum, outer margin of tegula, two long triangular maculae at center on inner sides of median mesoscutal lobe of mesonotum; mesoscutellum mostly, cenchri, small macula on lateral side of metascutellum, narrow band at center on posterior margin and large macula on lateral corners of abdominal tergum 1, small macula on lateral corners of abdominal tergum 2, large maculae on lateral corners of abdominal terga 3–5, small macula on lateral corners of abdominal tergum 6, narrow band on posterior margin of abdominal tergum 8, abdominal tergum 10 except basal margin with black macula, apical parts mostly in ventral side of fore coxa, apical half of middle coxa, apex and basal parts in outer side with an oval macula of hind coxa, all trochanters, basal margin and apical half in anterior side of fore femur, basal margin and apex in anterior side of middle femur, basal 1/4 of hind femur, fore tibia except some black stripes in outer side, anterior side of middle tibia except subbase with black macula, small macula on subbase in dorsal side of middle tibia, subbase in dorsal side with a long macula approximately 0.5 times length of hind tibia and fore and middle tarsi except inner sides with black maculae. Body hairs short and dense, pale yellowish brown; setae on sheath clearly curved and dense, dark yellowish brown. Wings hyaline, without smoky macula, stigma and veins black brown (Fig. 1).

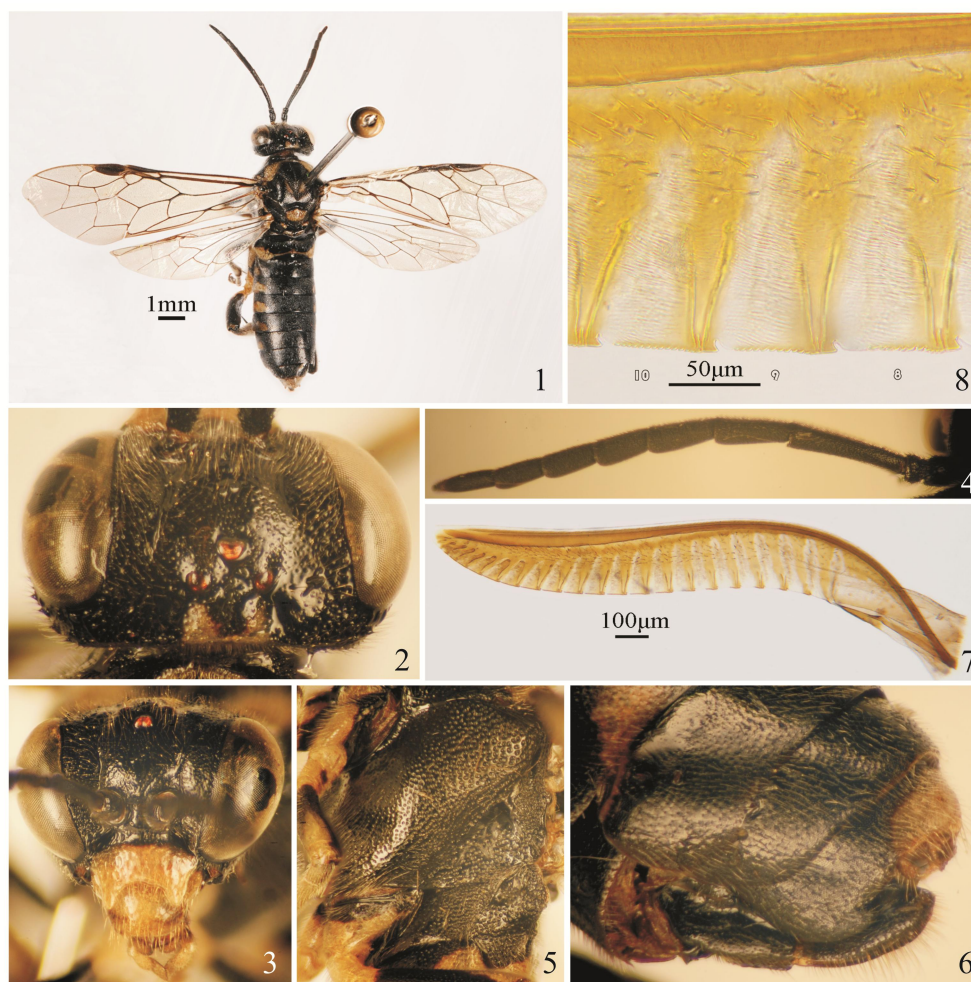
Dorsum of head less shiny, punctures on head sparse and shallow, smooth interspaces

between puncture distinct, but microsculptures fine; inner side of temple with small smooth area, without distinct puncture and microsculpture (Fig. 2); labrum and clypeus less shiny, with some shallow punctures, but without distinct microsculpture. Mesonotum less shiny, punctures on mesonotum broader than punctures on head, slightly dense, smooth interspaces between puncture not clear, with fine microsculptures; mesoscutellum less shiny, with some large shallow punctures; lateral sides of mesoscutellar appendage with clear puncture, microsculptures fine; metascutellum less shiny, with some large punctures, microsculptures fine. Mesopleuron less shiny, mesepisternum with dense and coarse punctures, smooth interspaces between puncture narrow, upper half with large punctures, lower half with minute and more punctures; anepimeron dull, with coarse wrinkles; anterior area of katepimeron smooth and very shiny, without punctures or microsculpture, posterior area mostly of katepimeron with some large punctures, smooth interspaces between punctures clear, dorsal side with some coarse punctures; metepisternum dull, with average minute punctures, smooth interspaces between punctures narrow; metepimeron less shiny, smooth interspaces between punctures narrow (Fig. 5). Abdominal tergum 1 shiny, basal 1/3 and two lateral sides of abdominal tergum 1 with some shallow punctures, central parts smooth, without microsculpture; other abdominal terga less shiny, with minute and shallow punctures, microsculptures fine. Hind coxa and outer side of hind femur with clear punctures, slightly dense and shallow, without clear microsculpture. Surface of sheath coriaceous, with indistinct punctures and fine microsculptures.

Labrum large, middle parts elevated, anterior margin of labrum truncate; clypeus elevated, base slightly broader than distance between lower corners of eyes; lateral sides distinctly convergent forwards, anterior margin sub-rounded, shallowly incised to approximately 2/5 length of clypeus, lateral corners sub-triangular, lobe margin obtuse (Fig. 3); malar space broad linear, approximately 0.5 times as broad as diameter of middle ocellus; frontal area and face weakly elevated, less higher than top of eyes in lateral view; middle fovea weak, pot-shaped; lateral foveae clear, short furrow-like; interocellar furrow shallow, postocellar furrow weak; POL : OOL : OCL = 7 : 12.5 : 9; postocellar area elevated, about 1.8 times broader than long; lateral furrow broad and slightly deep, divergent backwards; head narrowed behind eyes in dorsal view, occipital carina complete. Antenna not slender, approximately 1.11 times length of head and thorax together (10 : 9), approximately 0.82 times longer than abdomen (50 : 60); antennomere 2 as long as breadth; antennomere 3 approximately 1.5 times as long as antennomere 4 (3 : 2), approximately 0.85 times as long as antennomeres 4 and 5 together (11 : 13), middle antennomeres not inflated, subapical antennomeres not reduced (Fig. 4). Mesoscutellum weakly elevated, without peak and carina, lower than top of mesonotum in lateral view; mesoscutellar appendage with short and obtuse middle carina; metascutellum with short and lower carina; dorsal-posterior platform of mesepimeron as broad as diameter of middle ocellus; posterior corner of metepimeron round and obtuse, without appendage; distance between cenchri 2.5 times breadth of a cenchrus; mesopleuron and metapleuron as shown in Fig. 5. Inner tibial spur of hind leg 0.63 times length of hind metabasitarsus (5 : 8), hind metabasitarsus not clearly slender, about 0.88 times longer than following 4 tarsomeres together (8 : 9); claw with inner tooth as long as outer tooth. Ovipositor sheath clearly shorter than hind metabasitarsus (33 : 40), apical sheath slightly longer than basal sheath (19 : 14), setae on sheath clearly curved, apical margin protruding rounded in lateral view (Fig. 6). Fore

wing with crossvein cu-a joining cell 1M at basal 1/3, crossvein 2r joining cell 2Rs at apical 1/3, cell 2Rs slightly longer than cell 1R<sub>1</sub> and cell 1Rs, petiole of anal cell slightly shorter than crossvein 1r-m and slightly shorter than 0.5 times length of vein cu-a; petiole of anal cell in hind wing as long as 1/4 times crossvein cu-a. Lancet with 21 serrulae (Fig. 7), lancet low and straight, middle serrulae each with 1 proximal and 11–13 distal teeth, subbasal teeth clear and small, annular spine bands broad, the 8th–10th serrulae at base as shown in Fig. 8.

Male. Unknown.



Figures 1–8. *Macrophya guanshanicus* Li, Liu & Wei sp. nov., ♀, holotype. 1. Female adult, dorsal view; 2. Head of female, dorsal view; 3. Head of female, anterior view; 4. Antenna of female; 5. Mesopleuron and metapleuron of female; 6. Ovipositor sheath, dorsal view; 7. Lancet; 8. The 8th–10th middle serrulae.

**Holotype.** ♀, **China**, Jiangxi, Mt. Guanshan, 08-V-2011, Malaise trap # 4–5, Maoling SHEGN leg.

**Etymology.** The species epithet “*guanshanicus*” is derived from the locality by Mt. Guanshan, which belongs to Jiangxi Province, China.

**Remarks.** In this group, the new species is a member of the *M. ligustri* group and is

similar to *M. ligustri* Wei & Huang, 1997, but differs from the latter in small macula in lateral sides of postocellar area; apical antennomeres 6–9 not reduced; 2 long triangular yellowish brown maculae at center on inner sides of median mesoscutal lobe of mesonotum; metascutellum not entirely black, lateral sides with small yellowish brown maculae; yellowish brown band at center on posterior margin of abdominal tergum 1, lateral corners with clear yellowish brown maculae; lateral corners of abdominal terga 2–6 with distinct yellowish brown maculae, but yellowish brown maculae on lateral corners of abdominal tergum 2 and tergum 6 smaller; abdominal tergum 8 mostly black, posterior margin with narrow yellowish white band; fore and middle coxae mostly black, shortly yellowish white; basal 1/4 of hind femur yellowish brown, basal 3/4 black. In *M. ligustri*, posterior margin of postocellar area yellowish white; apical antennomeres 6–9 reduced; median mesoscutal lobes of mesonotum entirely black; narrow band at center on posterior margin of abdominal tergum 1 yellow, lateral corners entirely black; lateral corners of abdominal terga 2–7 with distinct yellowish white maculae, but yellowish white maculae on lateral corners of abdominal tergum 2 and tergum 7 smaller; middle parts of abdominal tergum 8 yellowish white, lateral sides black; fore and middle coxae hardly yellow, but basal margins black; basal half of hind femur yellowish white, apical half black.

Distribution. China (Jiangxi).

## 2. *Macrophya nigroscapila* Li, Liu & Wei sp. nov. (Figs. 9–16)

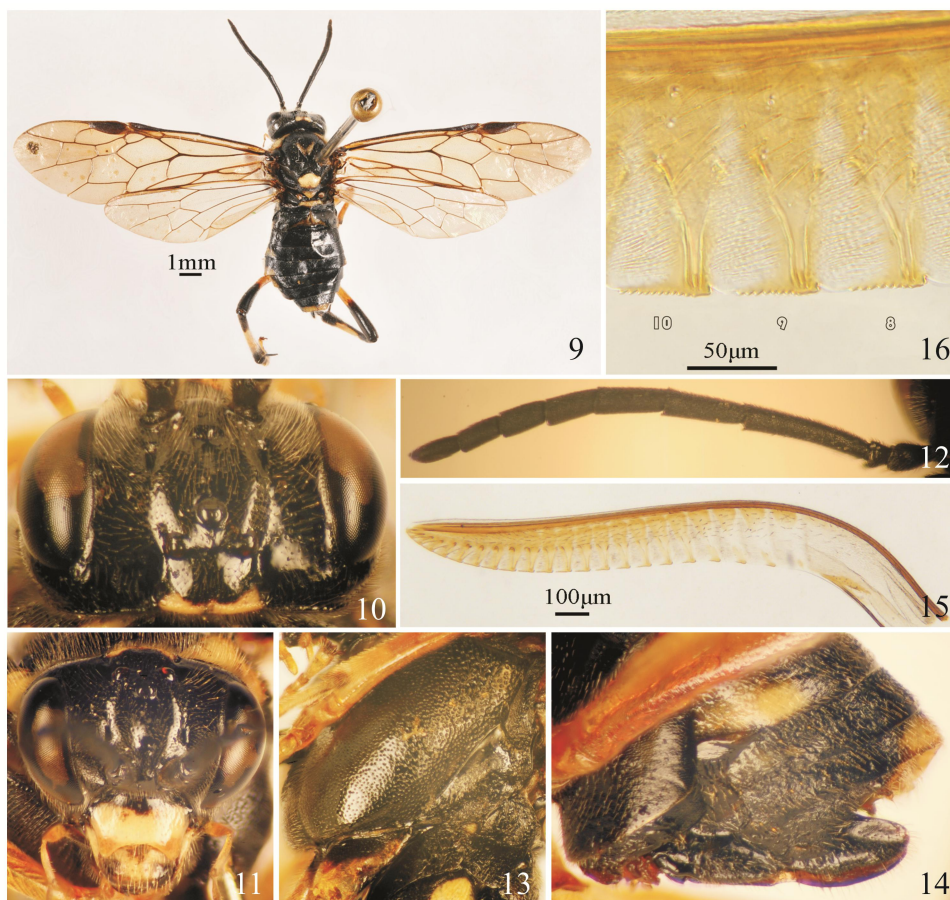
Female. Body length 9 mm. Body and legs largely black; following parts yellowish white: palp, basal half of mandible, labrum except lateral sides with black maculae, clypeus, transverse macula on posterior margin of postocellar area, lateral corners and outer margin of pronotum, outer margin of tegula, 2 long maculae at bottom in median mesoscutal lobes of mesonotum, mesoscutellum, mesoscutellar appendage, metascutellum, faint macula at center on posterior margin of mesepisternum, small macula on posterior corner of metepisternum, broad band at center on posterior margin of abdominal tergum 1, small maculae on lateral corners of abdominal terga 1–2, large maculae on lateral corners of abdominal terga 3–7, middle parts of abdominal tergum 8, abdominal tergum 10, apex and some stripes in outer sides of fore and middle coxae, apex and an oval macula in outer side of hind coxa, all trochanters, fore and middle femora, basal 4/7 of hind femur, fore and middle tibiae except apex with black maculae, long macula on middle part in dorsal side 0.5 times length of hind tibia, fore and middle tarsi except base and apex with black rings, fore and middle tarsomeres 2–5 except apical margins with black rings, apex in dorsal side of hind metabasitarsus and hind tarsomeres 2–5 entirely. Body hairs short and dense, silver; setae on sheath slightly curved, yellowish brown. Wings hyaline, without smoky macula, stigma and veins black brown (Fig. 9).

Dorsum of head strongly shiny, punctures on head sparse and very shallow, most parts smooth, without distinct microsculpture; inner side of temple with small smooth area, without distinct puncture and microsculpture, very shiny (Fig. 10); labrum and clypeus shiny, without distinct punctures, but with fine microsculptures. Mesonotum less shiny, punctures on mesonotum smaller than those on head, smooth interspaces between puncture not clear, with fine microsculptures; mesoscutellum less shiny, with some large shallow punctures; mesoscutellar appendage with some shallow punctures, microsculptures fine; metascutellum

less shiny, with some large punctures, microsculptures clear. Mesopleuron less shiny, mesepisternum with dense and coarse punctures slightly, smooth interspaces between punctures narrow, upper half with large punctures, lower half with minute and more punctures; anepimeron dull, with coarse wrinkles; anterior area of katepimeron smooth and very shiny, without punctures or microsculpture, posterior area mostly of katepimeron with some large punctures, smooth interspaces between punctures clear, dorsal side with some coarse punctures; metepisternum dull, with average minute punctures, smooth interspaces between punctures narrow; metepimeron less shiny, with some large shallow punctures, microsculptures dense (Fig. 13). All abdominal terga less shiny, two lateral sides of abdominal tergum 1 with some shallow punctures, central parts hardly smooth, without microsculpture; center parts of other abdominal terga with minute and shallow punctures, microsculptures fine. Hind coxa and outer side of hind femur with clear punctures, slightly dense and shallow, without clear microsculpture. Surface of sheath coriaceous, with indistinct punctures and fine microsculptures.

Labrum large, middle parts elevated, anterior margin of labrum truncate; clypeus weakly elevated, base slightly broader than distance between lower corner of eyes; lateral sides distinctly convergent forwards, anterior margin sub-rounded, shallowly incised to approximately 1/3 length of clypeus, lateral corners sub-triangular, lobe margin obtuse (Fig. 11); malar space broad linear, approximately 0.8 times as broad as diameter of middle ocellus; frontal area and face weakly elevated, higher than top of eyes in lateral view; middle fovea weak, lateral foveae clear, short furrow-like; interocellar furrow shallow, postocellar furrow weak; POL : OOL : OCL = 6 : 13 : 9; postocellar area elevated, about 1.7 times broader than long; anterior half of lateral furrow shallow, posterior half deep, divergent backwards; head narrowed behind eyes in dorsal view, occipital carina complete. Antenna not slender, approximately 1.11 times length of head and thorax together (10 : 9), head and thorax as long as abdomen; antennomere 2 as long as breadth; antennomere 3 approximately 1.56 times as long as antennomere 4 (25 : 16), approximately 0.83 times as long as antennomeres 4 and 5 together (5 : 6), subapical antennomeres not inflated, subapical antennomeres not reduced (Fig. 12). Mesoscutellum weakly elevated, without peak and carina, as high as top of mesonotum in lateral view; mesoscutellar appendage with short and obtuse middle carina; metascutellum without distinct carina; dorsal-posterior platform of mesepimeron as broad as diameter of middle ocellus; posterior corner of metepimeron round and obtuse, without appendage; distance between cenchri 3 times breadth of a cenchrus; mesopleuron and metapleuron as shown in Fig. 13. Inner tibial spur of hind leg 0.67 times length of hind metabasitarsus (2 : 3), hind metabasitarsus not clearly slender, slightly longer than following 4 tarsomeres together (45 : 43); claw with inner tooth slightly longer than outer tooth. Ovipositor sheath clearly shorter than hind metabasitarsus (4 : 5), apical sheath as long as basal sheath, apical margin round narrowed in lateral view (Fig. 14). Fore wing with crossvein cu-a joining cell 1M at basal 1/3, crossvein 2r joining cell 2Rs at apical 1/3, cell 2Rs clearly shorter than cell 1R<sub>1</sub> and cell 1Rs, petiole of anal cell 2 times length of crossvein 1r-m and as long as vein cu-a; petiole of anal cell in hind wing shorter than 0.5 times of crossvein cu-a. Lancet with 21 serrulae (Fig. 15), lancet low and straight, middle serrulae each with 1 proximal and 8–11 distal teeth, subbasal teeth clear and small, annular spine bands broad, the 8th–10th serrulae at basal as shown in Fig. 16.





Figures 9–16. *Macrophya nigroscapila* Li, Liu & Wei sp. nov., ♀, holotype. 9. Female adult, dorsal view; 10. Head of female, dorsal view; 11. Head of female, anterior view; 12. Antenna of female; 13. Mesopleuron and metapleuron of female; 14. Ovipositor sheath, dorsal view; 15. Lancet; 16. The 8th–10th middle serrulae.

Male. Unknown.

**Holotype.** ♀, **China**, Anhui, Mt. Huoshan, alt. 500–900 m, 13-V-2004, Wei XIAO leg.;  
**Paratype.** 1♀, **China**, Anhui, Jinzhai County, Tiantangzhai, E 115°45.854', N 31°09.770', alt. 596 m, 06-V-2006, Xiaoni ZHU leg.

**Etymology.** The species epithet “*nigroscapila*” is derived from the Latin words “*niger*” and “*scapulae*” referring to the antennae being entirely black.

**Remarks.** In this group, this new species is a member of *M. ligustri* group and is similar to *M. micromacula* Wei & Nie, 2002, but differs from the latter in transverse white macula on posterior margin of postocellar area; posterior margin and lateral corners of pronotum with distinct yellowish white maculae; tegula mostly black, outer margin yellowish white; 2 long yellowish white maculae at bottom in median mesoscutal lobes of mesonotum; mesoscutellum, mesoscutellar appendage largely and metascutellum yellowish white; middle part on posterior margin of mesepisternum and posterior corner of metepisternum with small yellowish white maculae; basal parts mostly of fore and middle coxae black, apex yellowish white; hind coxa

not entirely black, apex yellowish white, outer side with a small oval white macula; long macula on middle part on dorsal side 0.5 times length of hind tibia yellowish white; apex in dorsal side of hind metabasitarsus and hind tarsi 2–5 yellowish white; petiole of anal cell in fore wing long, about 2 times longer than vein 1r-m, as long as vein cu-a; middle serrulae of lancet each with 1 proximal and 8–11 distal teeth. In *M. micromacula*, faint white macula on posterior margin of postocellar area; narrow band on posterior margin of pronotum; tegula mostly yellowish white, shortly black; mesonotum entirely black; mesoscutellum mostly black, lateral sides with small white maculae; mesoscutellar appendage not yellowish white, posterior part black; metascutellum not entirely yellowish white, middle parts black; small yellow macula at center on posterior margin of mesepisternum clear; metepisternum entirely black; fore and middle legs hardly yellowish white, but basal margins black; apical half in ventral side of hind coxa yellowish white, outer side with a large oval macula; hind tibia and tarsus entirely black; petiole of anal cell in fore wing short, as long as vein 1r-m, about 0.65 times length of vein cu-a; middle serrulae of lancet each with 1 proximal and 10–14 distal teeth.

Distribution. China (Anhui).

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